

THREE NEW SPECIES OF MALLOPHAGA  
(INSECTA)

BY

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BULLETIN OF  
THE BRITISH MUSEUM (NATURAL HISTORY)  
ENTOMOLOGY

Vol. 11 No. 2

LONDON: 1961

THE BULLETIN OF THE BRITISH MUSEUM  
(NATURAL HISTORY), *instituted in 1949, is  
issued in five series corresponding to the Departments  
of the Museum, and an Historical Series.*

*Parts will appear at irregular intervals as they become  
ready. Volumes will contain about three or four  
hundred pages, and will not necessarily be completed  
within one calendar year.*

*This paper is Vol. II, No. 2 of the Entomological  
series. The abbreviated titles of periodicals cited follow  
those of the World List of Scientific Periodicals.*

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THE BRITISH MUSEUM

*Issued October 1961*

*Price Ten shillings*

# THREE NEW SPECIES OF MALLOPHAGA (INSECTA)

By THERESA CLAY

## NEW SPECIES OF HOLOMENOPON EICHLER, 1941 (MENOPONIDAE)

THE genus *Holomenopon* is known only from the bird order Anseriformes, although it seems to be nearly related to *Austromenopon* found on the Charadriiformes. It differs from this latter genus by the presence of a fourth head sensillus (see Clay, 1961), by the jagged edge of the prosternal plate (Text-fig. 3), and the tendency in the male to have more than one row of abdominal tergal setae. Both *Holomenopon* and *Austromenopon* have only two short mesothoracic setae and the mesothoracic plate is reduced to two irregular sclerites round these setae with an area of toothed integument posteriorly (Text-fig. 4).

There are a number of forms of *Holomenopon* distinguishable from each other mainly by the tergal chaetotaxy of the males; however, it has not been found possible at the present time to resolve the nomenclature of most of these owing to the lack of an adequate series of authentic material from *Anas crecca*, the host of *H. leucoxanthum* (Burmeister, 1838) the earliest described form. The present new species is, however, quite distinct from any other known species of *Holomenopon* by its size, asymmetry of the male abdomen and the characters of the genital region of the female.

### *Holomenopon goliath* sp. n.

Type host: *Anseranas semipalmata* (Latham).

MALE. As shown in Text-figs. 1-7. Head with sensilli<sup>1</sup> 1-4 present; in other species of *Holomenopon* examined there is no sensillus 4 associated with the usual seta but there is a sensillus posterior to this seta lying in the centre of the head each side of the vertical mid line. The setae associated with sensillus 3 and 4 are surrounded by a line which perhaps represents the border of a less heavily sclerotized area. Lingual and sitaphore sclerites of the hypopharynx reduced; pharyngeal crest not apparent; antenna as in Text-fig. 2. Prosternal (Text-fig. 3) and mesosternal (Text-fig. 4) plates as in the figures. Mesothorax well defined dorsally with anterior mesothoracic setae (see Clay, 1961) 4 in number, small and lying

<sup>1</sup> These circular clear areas of the head and those associated with the post-spiracular setae have previously been referred to as sensilli although their true function is unknown. It might be more satisfactory to use a neutral term such as "leucodisc", but in order not to change the terminology of the taxonomically important ones of the head and abdomen the term sensilli will continue to be used for these.

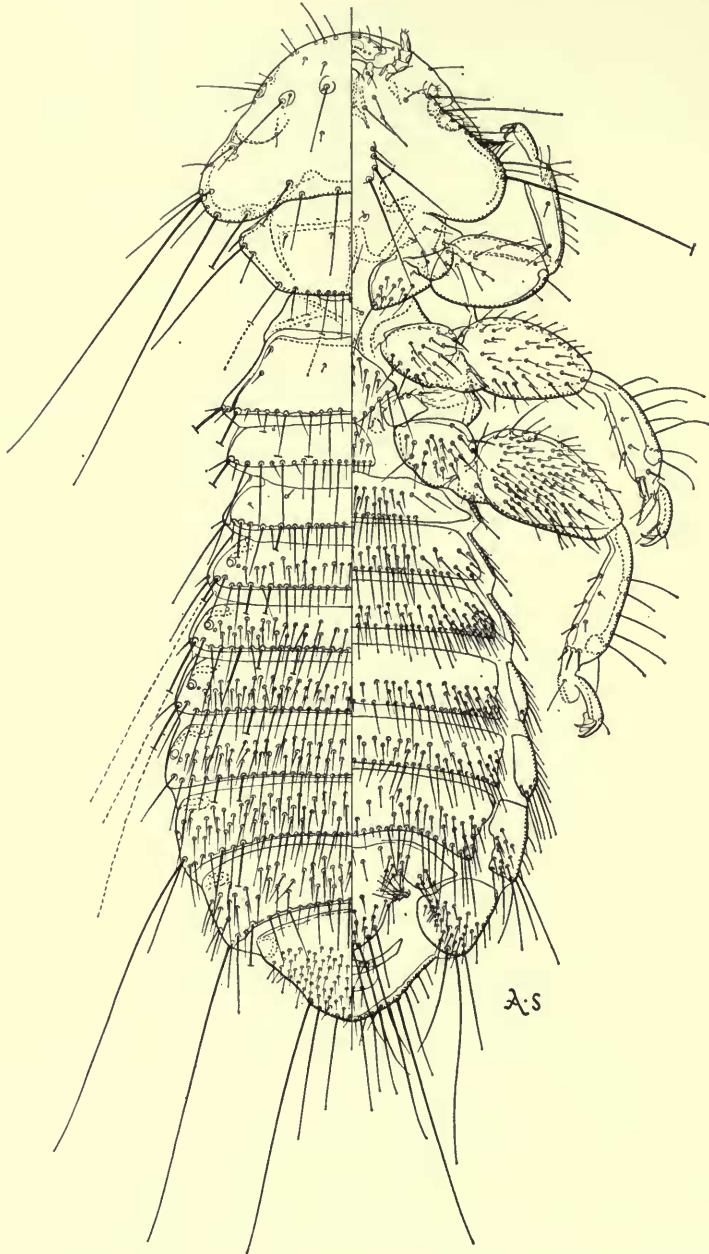
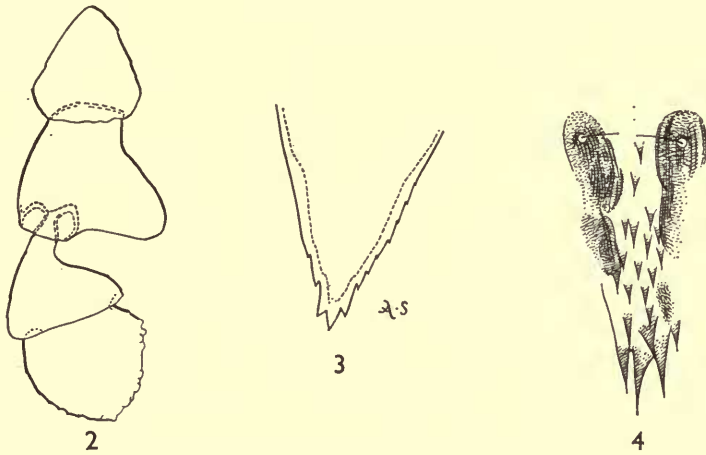


FIG. 1. *Holomenopon goliath* sp. n. Male. A horizontal line across a seta indicates that it is broken, a dotted line that it has been completed from another specimen.

close together. Abdominal sternite VIII (and possibly IX) show asymmetry (Text-fig. 5). Genitalia unlike any other in the genus, as shown in Text-figs. 6-7; it has not been possible to do more than indicate the general appearance of the sclerite of the genital sac (Text-fig. 7) as the shape of this structure alters according to the pressure on the walls of the sac. Abdominal chaetotaxy as in Text-fig. 1, but there is some individual variation in number and arrangement of the setae.



FIGS. 2-4. *Holomenopon goliath* sp. n. Male. 2. Outline of antenna. 3. Prosternal plate. 4. Mesosternal plate.

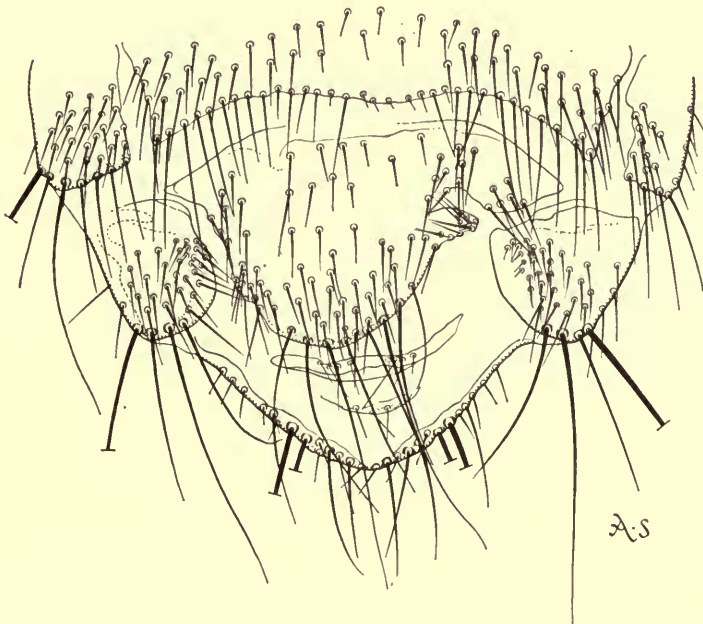
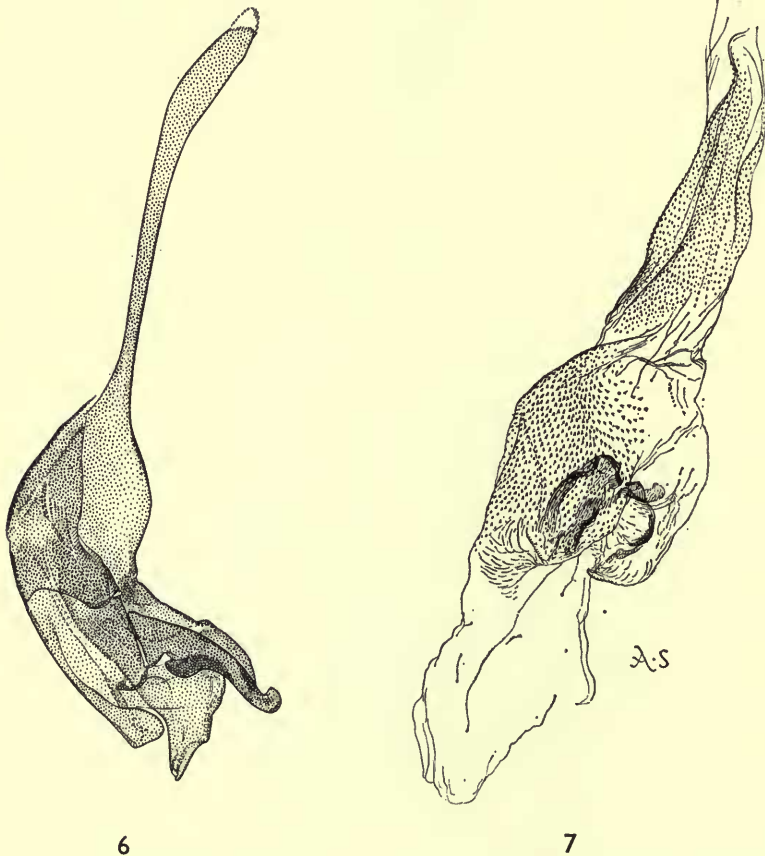


FIG. 5. *Holomenopon goliath* sp. n. Terminal sterna of male abdomen.

On segments I-II, the first seta is spine-like and the post-spiracular is the second seta each side; in the remainder of the segments the post-spiracular seta is the outer marginal seta each side.

FEMALE. As shown in Pl. I, fig. 1. General characters of head and thorax as in male. Abdominal tergites with marginal row of setae only, the shorter setae in this row are more spine-like than in the male; last tergum (fused IX-XI) without setae. Genital region as shown in Text-fig. 8; the internal forked structure is probably associated with the genital chamber.



FIGS. 6-7. *Holomenopon goliath* sp. n. Male genitalia. Genital sac is shown enlarged in fig. 7.

Measurements in mm.  
(In Canada balsam)

	Male		Female	
	Length	Breadth	Length	Breadth
Head . . . . .	0.43	0.83	0.40	0.75
Prothorax* . . . . .	0.28	0.61	—	0.60
Mesothorax* . . . . .	0.09	0.52	—	—
Metathorax* . . . . .	0.18	0.71	—	0.67
Abdomen . . . . .	1.64	0.99	1.52	1.00
Total . . . . .	2.71	—	2.50	—
Genitalia . . . . .	1.35	—	—	—

\* Length of thoracic segments taken along midline of terga, the condition of the female is too poor to enable these measurements to be taken.

*Material examined*: 5 ♂ from *Anseranas semipalmata* from Townsville, Queensland, Australia, collected by Mr. H. J. Lavery (Department of Agriculture and Stock, Queensland) 5.8.1958; 1 ♀ from *Anseranas melanoleucus* = *A. semipalmata* without further data, in the Harrison collection of the British Museum (Natural History).

*Holotype* ♂ from *Anseranas semipalmata* with the above data in the Queensland Museum, Brisbane; allotype ♀, slide no. 656 in the British Museum (Natural History).

*Paratypes*: 4 ♂ from the same host species with data as given above.

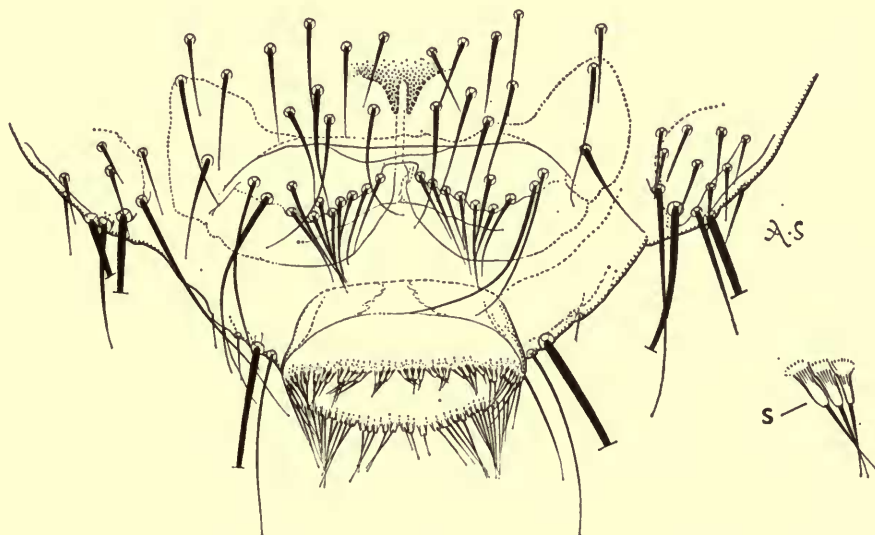


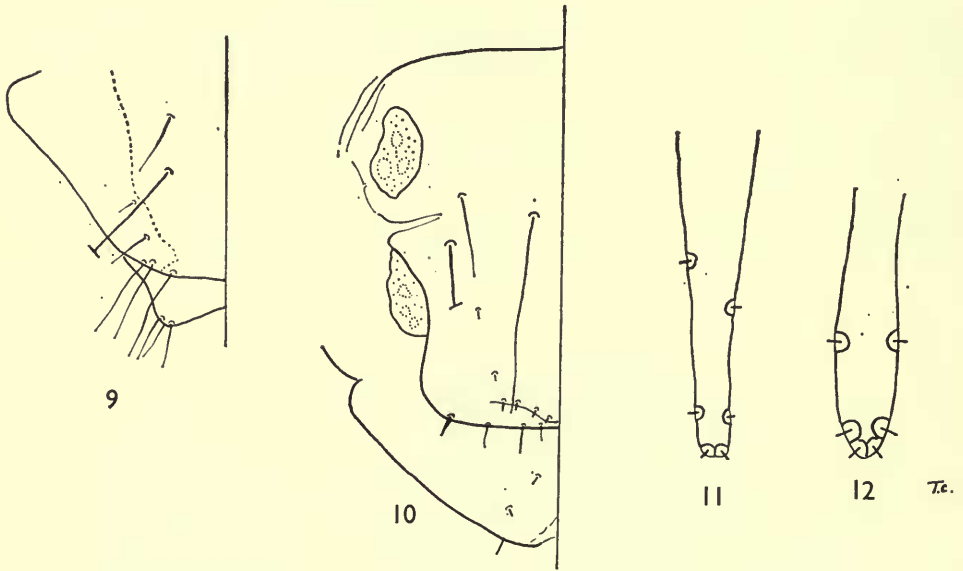
FIG. 8. *Holomenopon goliath* sp. n. Terminal sterna of female abdomen. s.—enlarged view of setae round anal opening.

A NEW SPECIES OF RHYNONIRMUS THOMPSON, 1935  
(PHILOPTERIDAE)

The differences between the *Otidoecus*-complex (including *Otidoecus*, *Rhynonirmus* and *Cuclotogaster*) and the *Degeeriella*-complex have been discussed elsewhere (Clay, 1958 : 125), but whether it will be possible to retain the separation of *Rhynonirmus*, *Cuclotogaster* and *Otidoecus* seems doubtful. For the purpose of this paper, however, the species of this complex from the Charadriiformes will be referred to as *Rhynonirmus*. A key to the genus to include the new species is given below (see also Timmermann, 1957 : 89).

***Rhynonirmus parsonsaе* sp. n.**

Type host : *Philohela minor* (Gmelin).



FIGS. 9-12. *Rhynonirmus*. 9-10. *R. parsonsaе* sp. n. 9. Terminal sterna of male abdomen ; there is variation in number and position of setae. 10. Terminal sterna of female abdomen. 11-12. Distal end of "penis". 11. *R. parsonsaе* sp. n. 12. *R. infuscatus* (Osborn).

This species can be distinguished from *infuscatus* (Osborn) by the shape of the head in both sexes, in the male by the relatively longer first antennal segment and the characters of the genitalia, and in the female by the shape of the last segment of the abdomen.

MALE. Shape of the head as in Pl. 2, fig. 2, marginal carina thicker than that of *infuscatus* (Pl. 2, fig. 1) and the shape of its inner margin different. Chaetotaxy of head and general characters of antenna as in *infuscatus* (Thompson, 1935 : 283),



but the first antennal segment is longer; in both species the third segment may appear as shown in the figure by Terzi (*Ibid.*, fig. 1b) or when mounted in a different position as in the figure of *R. scolopacis* (*Ibid.*, fig. 2b); in both *infuscatus* and this species there is only one seta in the middle of the dorso-anterior margin of segment 4 of the antenna, not three as shown in the figure. Thorax as in *infuscatus*. Abdomen in general as in *infuscatus* but in *parsonsae* tergite II is usually completely separated medially, though an occasional specimen has a thin junction posteriorly, whereas in all specimens of *infuscatus* examined tergite II is never completely separated into two plates; in this species tergites V–VII are narrowed centrally to a greater extent than in *infuscatus*, and V in some specimens is interrupted medially. Genitalia (Pl. 2, fig. 6; Text-fig. 11) similar to those of *infuscatus* (Thompson, 1935, fig. 4a) but differing by the mesosome not showing a divided plate as in Pl. 2, fig. 3,m., by the inner arm of the mesosome being more strongly sclerotized and differently shaped (Pl. 2, figs. 3 & 6,a) and by the position of the setae on the "penis" (Text-figs. 11–12); the two anterior setae may or may not be placed asymmetrically.

FEMALE. General characters as shown in Pl. 2, fig. 5; marginal carina as in male. This species differs from *R. infuscatus* in having tergites II–V or VI deeply indented medially and VI or VII and sometimes VIII with a shallow notch; the terminal segment (fused IX–XI) differs in shape from that of *infuscatus* (Pl. 2, figs. 4–5).

CHAETOTAXY OF THORAX AND ABDOMEN. That of thorax as in *infuscatus* (in Thompson, 1935) except for the posterior margin of the pterothorax where only that of the female is given and no mention made of variation. In both species the female setae are usually arranged (from the outside) 1 + 2 + 2 each side, but some specimens have 1 + 2 + 3 on one side and one specimen of *parsonsae* has the arrangement on one side 1 + 2 + 1 + 2 + 1, which is nearer that of the male. In the male the arrangement is 1 + 2 + 3 + 1 or 1 + 2 + 4 + 1. Abdominal chaetotaxy in both sexes similar to that of *infuscatus* but there are fewer sternal setae. Post-spiracular setae in both sexes of *parsonsae* are found on segments III–VIII, those of III–V being long and stout and having contiguous sensilli. Pleural setae in both sexes: II–III, 0; IV–V, 1; VI–VII, 2; VIII, 3; IX, 2 and in the female: X, 2. Tergoventral setae of male: II, 3–4 with two long anterior setae; III–VIII, 4 with the occasional specimen having one segment with 5; IX, 2; X, 6 (3 + 3). In the female: II, 2–4 with two long anterior setae; III–VIII, usually 4, but specimens have been seen with only 2 setae on III or IV, or 3 on V, VI, or VIII, or 5 on VI or VIII; the anterior setae on the last tergum (fused IX–XI) may be absent or 1–3 in number; X, 4 (2 + 2). Sternal setae in both sexes: II, 2 or 3, rarely 4, with 2 anterior leucodiscs<sup>1</sup>; III–VI, usually 4, occasionally one segment may have 5 and there are 2 leucodiscs in the line of setae; in the male: VII, 4; VIII, 2; female genital plate with 6. Ventral chaetotaxy of the last segments as in Text-figs. 9–10. In the male of *infuscatus*, although any of the sternites III–VII may have only 4 setae, no single specimen has been seen with 4 setae on all segments (which is the rule in *parsonsae*); one has been seen with the following numbers: III–IV, 4; V–VI, 5; VII, 4; most specimens have two or more segments with 6; segments IV or V may have 7 setae.

<sup>1</sup> See footnote on p. 45.

Measurements in mm.  
(In Canada balsam)

	Male		Female*	
	Length	Breadth	Length	Breadth
Head . . . . .	0.46	0.32	0.51	0.38
Prothorax . . . . .	—	0.22	—	0.27
Pterothorax . . . . .	—	0.29	—	0.36
Abdomen . . . . .	0.88	0.40	1.06	0.50
Total . . . . .	1.69	—	1.87	—
Genitalia† . . . . .	0.30	—	—	—

\* Not in Canada balsam.

† Different specimen.

	Breadth of head at temples				R‡	
	Male		Female		Male	
	Range	Mean	Range	Mean	Range	Mean
<i>R. infuscatus</i> . . . . .	0.30-0.33	0.31 (11)	0.34-0.37	0.35 (10)	21.6-24.3	23.1 (20)
<i>R. parsonsae</i> . . . . .	0.30-0.34	0.32 (15)	0.35-0.38	0.36 (8)	25.0-29.0	27.0 (14)

$$R\ddagger = \frac{\text{Length 1st antennal segment} \times 100}{\text{Head length}}$$

Number of antennae in brackets.

It is not possible in treated specimens to get an accurate measurement of the length of the antennal segments.

MATERIAL EXAMINED. 16 ♂, 28 ♀ from *Philohela minor* from Amherst, Massachusetts, U.S.A., collected by Miss Margaret A. Parsons, July, 1957 and 6 ♂, 31 ♀ from the same host species from various localities in the U.S.A.

*Holotype* ♂ and *allotype* ♀ in the Smithsonian Institution, United States National Museum, Washington, from Amherst, Massachusetts.

*Paratypes*: 21 ♂, 58 ♀ from the same host species, data given above.

### KEY TO THE SPECIES OF *Rhynonirmus*

- 1 Anterior margin of head rounded laterally (Pl. II, figs. 1-2, 4-5, Pl. III, fig. 1) . . . . . 2
- Anterior margin of head angled laterally (Pl. III, fig. 2) . . . . . 4
- 2 (1) Anterior margin of head pointed medially (Pl. III, fig. 1) . . . . . *helveticus* (Burm., 1838)
- Anterior margin of head not pointed medially (Pl. II, fig. 1) . . . . . 3
- 3 (2) Shape of head, inner margin of marginal carina and terminal segments of ♀ abdomen as in Pl. II, figs. 1 and 4 . . . . . *infuscatus* (Osborn, 1896)
- Shape of head, inner margin of marginal carina and terminal segments of ♀ abdomen as in Pl. II, figs. 2 & 5 . . . . . *parsonsae* sp. n.
- 4 (1) Males . . . . . 5
- Females . . . . . 7
- 5 (4) End of parameres reach to or beyond middle pair of setae on "penis" . . . . . 6
- End of parameres do not reach to middle pair of setae; shape of mesosome and parameres as in Pl. III, fig. 5 . . . . . *medius* Timmerman, 1955

- 6 (5) Shape of parameres and mesosome as in Pl. III, fig. 3 . . . *scolopacis* (Denny, 1842)  
 - Shape of parameres and mesosome as in Pl. III, fig. 6 . . . *stenurae* Timmermann, 1955
- 7 (4) Anterior margin of head usually straight (occasionally slightly indented), inner margin of marginal carina parallel with anterior margin of head; tergites V-VI usually with slight anterior notch, deeper slit occasionally on V . . . *medius* Timmermann
- Anterior margin indented medially; inner margin of marginal carina usually slightly convex; tergites V, VI and sometimes VII with some anterior median division, V-VI usually with deep narrow slit . . . *scolopacis* (Denny)  
*stenurae*\* Timmermann

\* It has not been possible to use the character of the anterior margin of the head to separate all specimens of *medius* from *scolopacis* and *stenurae*. Females of *scolopacis* average somewhat larger than those of *stenurae* but there is some overlap. No males of the population from *Capella delicata* (described as *R. magnocephalus* (Carriker, 1902)) have been seen.

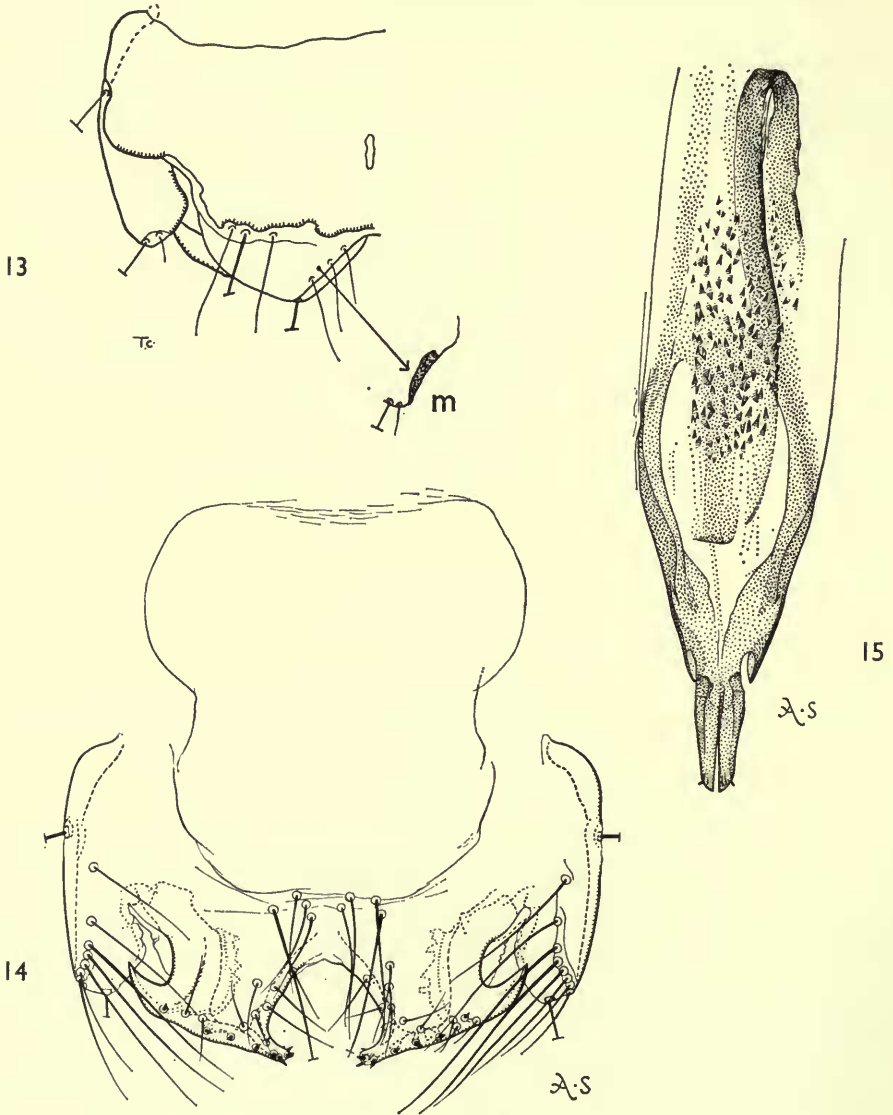
NOTE ON HOST DISTRIBUTION OF RHYNONIRMUS. The occurrence of a species of *Rhynonirmus*, a genus otherwise restricted to the subfamily Scolopacinae, on *Bartramia* (subfamily Tringinae) may indicate affinities of this latter host to the Scolopacinae as suggested by Timmermann (1957:89), or it may be a case of secondary infestation, stragglers from *Philohela* having become established on *Bartramia* with subsequent modification. This would be a case of the rather rare geographical distribution of Mallophaga in which hosts belonging to the same bird order in one geographical area are parasitised by the same or similar Mallophaga irrespective of the relationship of their hosts. An example of this is seen in the distribution of *Aquanirmus* on the grebes of Europe, Africa and N. America.

#### A NEW SPECIES OF PECTINOPYGUS MJÖBERG, 1910 (PHILOPTERIDAE)

Five species (listed below) of *Pectinopygus* have been described from *Pelecanus*. With the exception of *Pelecanus conspicillatus* (the host of *P. australis* Thompson) and *Pelecanus philippensis*, specimens have been seen from all the species of *Pelecanus* listed in Peters, 1931 (*Check-list of Birds of the World*). Each of these has a specific *Pectinopygus* with the exception of *P. roseus*, on which the population of the parasite appears to be conspecific with that on *P. onocrotalus*. The males are most easily distinguished from each other by the characters of the genitalia and the terminal segments of the abdomen, figures showing the characters of this latter part of the abdomen are included (with the exception of that of *Pectinopygus australis*) for comparison with the new species. *P. tordoffi* (Text-fig. 19) differs from the males of all other species examined in the lateral margin of the last segment not being produced forward each side as a projecting curved heavily sclerotized hook, one of the characters used to separate the subgenus *Epipelecanus* Harrison, 1935.

*Pectinopygus forcipatus* sp. n.Type host : *Pelecanus rufescens* Gmelin.

The male of this species is most similar to *P. forciculatus* from which it is distinguished by the shape of the head, the terminal segments of the abdomen and the genitalia. The available females are in too poor condition for description.



FIGS. 13-15. *Pectinopygus forcipatus* sp. n. Male. 13-14. Terminal segments of abdomen. 13. Dorsal. m.—dorsal margin of genital opening hidden in the figure by the margins of the anal opening. 14. Ventral. 15. Genitalia.

MALE. General appearance as in Pl. I, fig. 2. Antenna as shown in Thompson, 1948, fig. 6. Details of head and thorax as in other species from *Pelecanus* (see Elbel & Emerson, 1956); postero-dorsal margin of prothorax with one short and one long lateral seta each side; on each side of the postero-dorsal margin of the pterothorax there is an outer small spine-like seta, a long seta near this, a shorter seta and three long stout and one shorter slightly anterior setae grouped together in an unpigmented area. This arrangement is found in 10 of the 14 individuals examined; in addition one specimen has one of the long setae in the group absent on one side and three have an extra shorter seta in the group on one side only. Outline of thoracic sternal plates not definable in the available material; sternal setae as in *P. tordoffi*. Abdomen with tergites II–VIII separated medially; posterior terga fused into one transverse plate (Text-fig. 13). Sternites II–VII in the form of central plates, those on segments III–VII being more heavily sclerotized laterally, giving the appearance of two plates on each segment; posterior sternites fused to form a subgenital plate, this plate in all species is irregular and somewhat variable

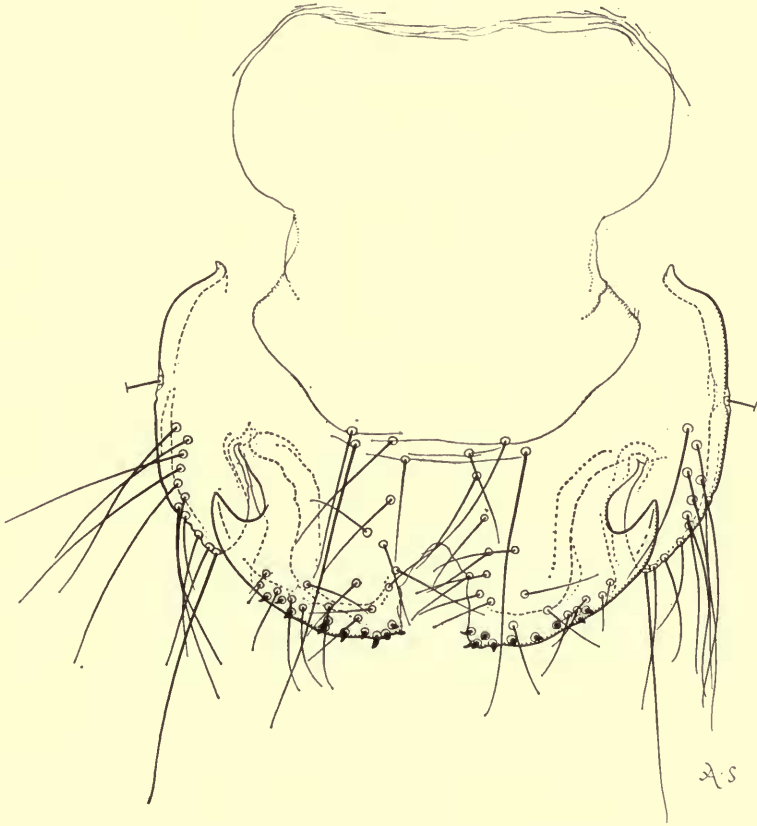
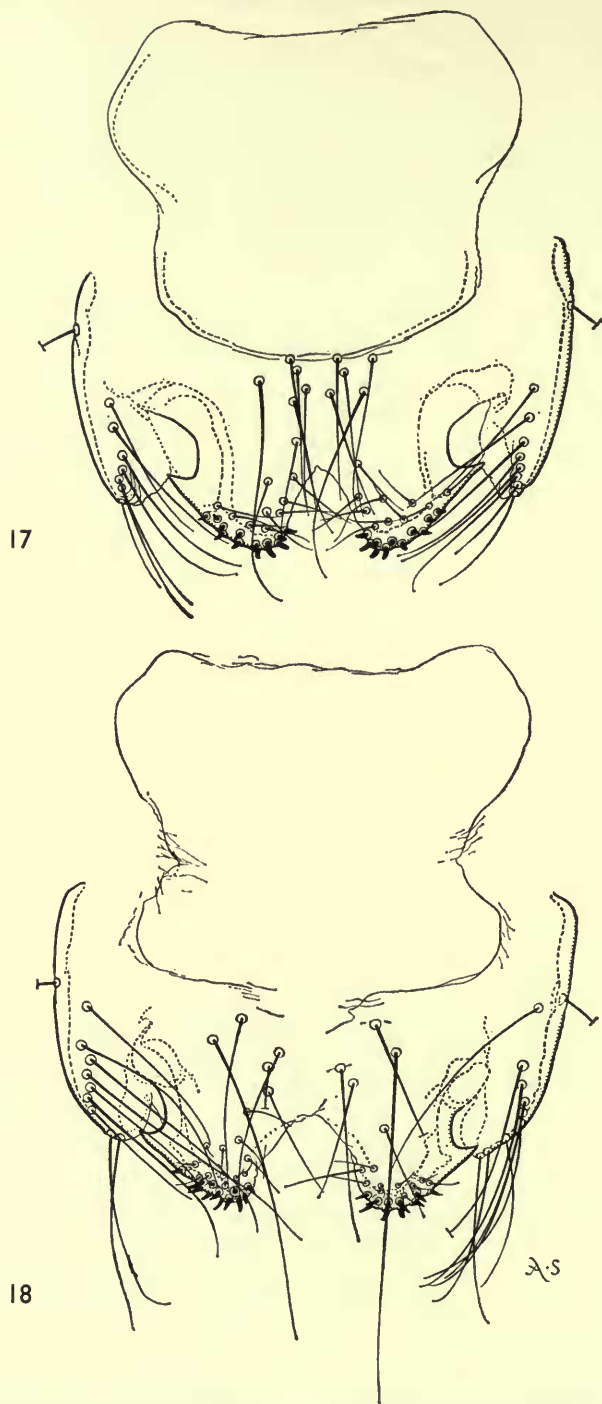


FIG. 16. *Pectinopygus forficulatus* (Nitzsch). Terminal sterna of male abdomen.



FIGS. 17-18. Terminal sterna of male abdomen. 17. *Pectinopygus bifasciatus* (Piaget).  
Lectotype. 18. *P. occidentalis* Thompson. Paratype.

in outline. Sterna of posterior segments as in Text-fig. 14, narrow sclerite lying vertically along each dorsal margin of the genital opening well marked (Text-fig. 13, m). Genitalia as in Text-fig. 15.

CHAETOTAXY OF ABDOMEN. On II-VIII with the exception of VI, there is a single marginal seta lying posterior to the spiracle which is probably the post-spiracular seta, but apparently without associated sensilli on any of the segments. Tergocentral setae: II-VIII, 4, the two most central setae are placed a little anteriorly to the outer two; segment II with two anterior central setae in addition. Pleural setae: II, 1-2; III-V, 2; VI-VIII, 4-5. Sternocentral setae: II, 3-5; III, 8-11; IV-V, 8-12; VI, 8-10; VII, 5-9; VIII, 2-3.

*Measurements of male in mm.*  
(In Canada balsam)

	Length	Breadth	
		Range	Mean
Head . . . . .	0.65 .	0.53	0.54 (13)
Prothorax . . . . .	— .	0.42	—
Pterothorax . . . . .	— .	0.53	—
Abdomen . . . . .	2.11 .	0.63	—
Total . . . . .	3.34 .	—	—
Genitalia* . . . . .	0.90 .	—	—

\* Different specimen.

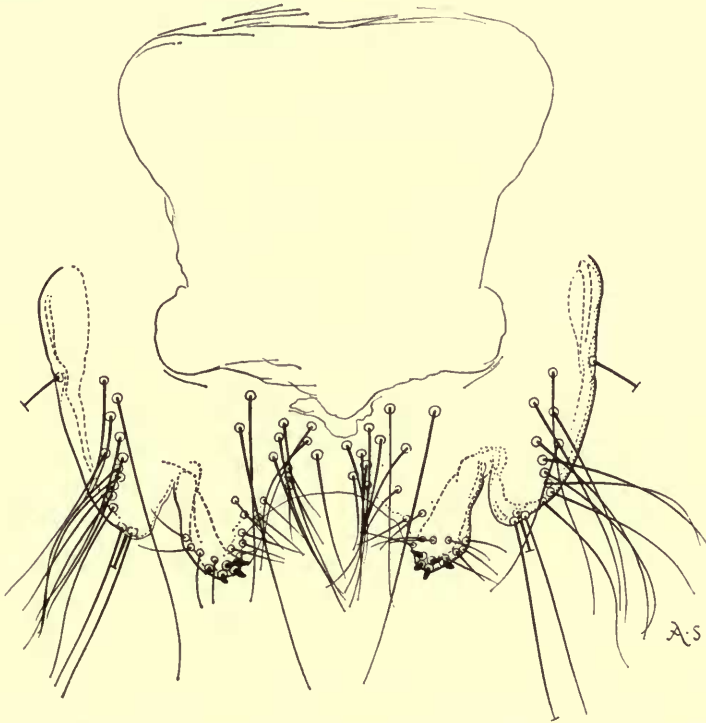


FIG. 19. *Pectinopygus tordoffi* Elbel & Emerson. Terminal sternum of male abdomen.

Material examined: 24 ♂ from *Pelecanus rufescens* from Kenya, Sudan, North Cameroons and Portuguese Guinea. I am indebted to Dr. J. Mouchet and Dr. J. Tendeiro for the opportunity to examine the specimens from the last two localities.

*Holotype* male in the British Museum (Natural History), slide no. 657, from *Pelecanus rufescens* Gmelin from Marou, N. Cameroons, 1959, collected by Dr. J. Mouchet. Paratypes: 23 ♂ from the same host species, data as given above.

Lectotype of *Pectinopygus bifasciatus* (Piaget, 1880): Male in the Piaget collection, British Museum (Natural History), slide no. 798. Paratypes: 3 males.

#### LIST OF SPECIES OF PECTINOPYGUS FROM PELECANUS

Species	Type host
<i>P. forficulatus</i> (Nitzsch, 1866).	<i>Pelecanus onocrotalus</i> Linn. (Also on <i>P. roseus</i> Gmelin).
<i>P. bifasciatus</i> (Piaget, 1880).	<i>Pelecanus crispus</i> Bruch.
<i>P. occidentalis</i> Thompson, 1948.	<i>Pelecanus o. occidentalis</i> Linn.
<i>P. australis</i> Thompson, 1948.	<i>Pelecanus c. conspicillatus</i> Temminck.
<i>P. tordoffi</i> Elbel & Emerson, 1956 (= <i>P. canadensis</i> Carriker, 1956).	<i>Pelecanus erythrorhynchos</i> Gmelin.
<i>P. forcipatus</i> sp. n.	<i>Pelecanus rufescens</i> Gmelin.

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#### ADDENDUM TO THE CHECK LIST OF MALLOPHAGA HOPKINS & CLAY, 1952

*Philoaterus maruhashi* Uchida, 1949 was referred with doubt to the genus *Craspedorrhynchus*, now through the kindness of Dr. J. E. Scanlon it has been possible to examine a paratype which shows that the species is a *Cuculoecus*.



#### PLATE I

FIG. 1. *Holomenopon goliath* sp. n. Female allotype. (B. M. Neg. 27447)

FIG. 2. *Pectinopygus forcipatus* sp. n. Male holotype. (B. M. Neg. 27446)